

Food & Beverage Packaging and Sterilization

The primary role of food & beverage packaging is to provide a safe barrier without sacrificing the content's nutritional ingredients, quality, or shelf life between the points of content production and consumption. The popular sterilization processing technologies in food & beverage production are hot-fill processing, aseptic processing, retort processing, and high-pressure processing (HPP).



The goal of the processing technologies is to bring the contents to a desired sterility (pH, moisture content, heat stability, microorganism, spore, and undesirable enzyme elimination) at production. It is the packaging's responsibility to maintain this sterility for the intended shelf-life of the contents when subjected to the normal insults of distribution.



Retort sterilization equipment

Unfortunately, sterility breaches do occur from time to time. This causes not only safety issues for the consumers, but also significant financial losses to manufacturers due to recalls and litigation. That said, it is too costly to over-design the package to accommodate every possible distribution challenge imaginable as this leads to energy loss and waste of packaging materials.

Stress Engineering Services, Inc. (SES) has expertise in both food & beverage processing and packaging. Our service areas include:

- Process condition optimization (agitation, headspace, duration, temperature, and pressure) for maximum heat penetration
- Hydrogen Peroxide Vapor (HPV) container sterilization optimization (nozzle & flow design, and duration)
- Material selection (PET, HDPE, PP, aluminum, metal, glass, etc.)
- Package format determination (flexible, rigid, or hybrid)
- Container design and optimization
- Closure design and optimization
- Filling/process equipment support

For more information on how we can help with your packaging and sterilization needs, contact us at 513-336-6701.

Technical Publications

[Reducing the Cost of HPP Packaging Development](#)

[Flexible Packaging: Case Study on Retort Sterilization Simulation](#)

Missed our previous newsletter?

Click [here](#) to read about our Polymer Film-Based Services.

Stress Engineering Services, Inc. (SES) offers an integrated team of experts in creative design, functional engineering, design for manufacturing, materials, cost analysis, and reliability to deliver the highest level of innovation and technical success in developing products and packaging. SES provides expert engineering consulting services for:

- New Product Development
- Material Science
- Risk Assessment
- Human Factors
- Failure Analysis
- Package Development
- Testing
- Industrial Design

SES has extensive laboratory testing capabilities for evaluating materials, product performance, life assessment, and failure analysis. We have extensive simulation capabilities to predict mechanical, thermal, and fluid flow characteristics of complex problems.

Take your engineering to the next level. Find out more at innovation.stress.com.

To learn more about Stress Engineering Services, Inc., visit our [website](#) or contact us at 513-336-6701.

ISO 9001:2015 & ISO 13485:2016 Certified
ISO 17025:2005 Accredited for Several Test Methods
ISTA Certified Testing Laboratory Member

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